

Claims

1. An arrangement for rotatable adjustment of a cap on an eyepiece housing comprising:

at least three stationary pins pointing radially outward from the eyepiece housing; and

at least three grooves, each of which is assigned to a pin, arranged on the inner side of the cap and rising in the axial direction; wherein

the three pins are arranged on the eyepiece housing in a plane at right angles to the longitudinal axis of the eyepiece housing, the heads of the pins having at least approximately the same spacing from the longitudinal axis, and wherein

sliding bottoms of the grooves assigned to each pin have a smaller spacing in relation thereto, so that the cap bears against the pins under prestress.

2. The arrangement as claimed in claim 1, wherein the grooves have catching recesses through their sliding bottoms, the shape of recesses being adapted to the heads of the pins and the depth of the recesses being such that, in catching positions, the cap bears against the pins under a prestress which is reduced in relation to the position on the sliding bottom.

3. The arrangement as claimed in claim 2, wherein an undersize of the sliding bottom in relation to the head of the pin is 1.0% to 2.0% of the spacing of the head from the longitudinal axis, and the corresponding undersize of the catching recesses is 0.01% to 0.9% of the spacing of the head from the longitudinal axis.

4. The arrangement as claimed in claim 1, wherein a part of each of the grooves located next to a lower edge of the cap is angled in the opposite direction to the axial incline and is open at the lower edge of the cap.

5. The arrangement as claimed in claim 4, wherein delimitation of the grooves running out at an acute angle in relation to the lower edge of the cap is milled off parallel to the longitudinal axis.

6. The arrangement as claimed in claim 4, wherein the grooves have catching recesses in their sliding bottoms, the shape of recesses being adapted to the heads of the pins and the depth of the recesses being such that, in catching positions, the cap bears against the pins under a prestress which is reduced in relation to the position on the sliding bottom, and wherein the grooves have a catching recess in the corner of the angle.

7. The arrangement as claimed in claim 1, wherein the heads of the pins are spherically shaped.

8. The arrangement as claimed in claim 7, wherein the heads of the pins are spherically polished.

9. The arrangement as claimed in claim 1, wherein the cap comprises an abrasion-resistant, elastically deformable plastic with a low coefficient of thermal expansion.

10. The arrangement as claimed in claim 9, wherein the cap comprises a glass-fiber-reinforced polycarbonate.

11. The arrangement as claimed in claim 1, wherein the cap is provided with a removable cover made of an elastomeric material.

12. An arrangement for rotatable adjustment of a cap on an eyepiece housing comprising:

an eyepiece housing having at least three protrusions aligned radially outward from the eyepiece housing and being stationary with respect to the housing; and

a cap having at least three grooves respectively associated with the at least three protrusions when the cap is operationally positioned on the eyepiece housing, wherein the grooves are arranged on an inner side of the cap, and wherein the grooves have at least a portion that is angled in the circumferential direction; wherein

the at least three protrusions are arranged on the housing such that the at least three protrusions each have a portion that lies substantially in a plane normal to the longitudinal axis of the eyepiece housing, wherein

outward ends of each of the at least three protrusions have approximately the same spacing from the longitudinal axis, and wherein

the at least three grooves associated with the at least three protrusions have a sliding bottom having a spacing, when the cap is not operationally positioned on the eyepiece housing, in relation to the longitudinal axis of the housing that is smaller than the spacing of the outward ends of the protrusions in relation to the longitudinal axis of the housing.

13. The arrangement as claimed in claim 12, wherein the protrusions are pins.

14. The arrangement as claimed in claim 13, wherein the pins have heads which are located furthest from the longitudinal axis of the housing.

15. The arrangement as claimed in claim 12, wherein the grooves have

catching recesses in the sliding bottoms, wherein the shapes of the recesses are adapted to interface with the protrusions, wherein the depths of the recesses are dimensioned in such a way that when the protrusions interface with the recesses, the cap bears against the protrusions under a force which is reduced in relation to when the protrusions interface with a portion of a sliding bottom other than a recess.

16. The arrangement as claimed in claim 15, wherein the undersize of the sliding bottom in relation to the end of the protrusion is about 1.0% to about 2.0% of the spacing of the head from the longitudinal axis, and the corresponding undersize of the catching recesses is about 0.01% to about 0.9% of the spacing of the ends of the protrusions to the longitudinal axis.

17. The arrangement as claimed in claim 12, wherein at least a portion of each of the grooves are located next to a lower edge of the cap and is open at the lower edge of the cap, and wherein the portion located next to the lower edge of the cap is angled in an opposite direction with respect to the first angled portion.

18. The arrangement as claimed in claim 17, wherein the portion of the cap located near the lower edge and forming a portion of the groove which forms one leg of an acute angle in relation to the lower edge is chamfered

19. The arrangement as claimed in claim 17, wherein the portions of the grooves that are oppositely angled with respect to the longitudinal axis meet, wherein the grooves have catching recesses in the sliding bottoms, wherein the shapes of the recesses are adapted to interface with the protrusions, wherein the depths of the recesses are dimensioned in such a way that when the protrusions interface with the recesses, the cap bears against the protrusions under a force

which is reduced in relation to when the protrusions interface with a portion of a sliding bottom other than a recess, and wherein a recess is located at the meeting points of the angled grooves.

20. The arrangement as claimed in claim 12, wherein at least a portion of each of the protrusions are spherically shaped.

21. The arrangement as claimed in claim 20, wherein at least a portion of each of the protrusions are spherically polished.

22. The arrangement as claimed in claim 12, wherein the cap comprises an abrasion-resistant, elastically deformable plastic with a low coefficient of thermal expansion.

23. The arrangement as claimed in claim 22, wherein the cap comprises a glass-fiber-reinforced polycarbonate.

24. The arrangement as claimed in claim 12, wherein the cap is provided with a removable cover made of an elastomeric material.

25. The arrangement of claim 12, wherein:

the grooves have catching recesses in the sliding bottoms, wherein the shapes of the recesses are adapted to interface with the protrusions, wherein the depths of the recesses are dimensioned in such a way that when the protrusions interface with the recesses, the cap bears against the protrusions under a force which is reduced in relation to when the protrusions interface with a portion of a sliding bottom other than a recess;

the undersize of the sliding bottom in relation to the end of the protrusion is

about 1.0% to about 2.0% of the spacing of the ends of the protrusions to the longitudinal axis, and the corresponding undersize of the catching recesses is about 0.01% to about 0.9% of the spacing of the ends of the protrusions to the longitudinal axis; and

at least a portion of each of the grooves are located next to a lower edge of the cap and is open at the lower edge of the cap, and wherein the portion located next to the lower edge of the cap is angled in an opposite direction with respect to the first angled portion.

26. The arrangement of claim 25, wherein a recess is located at a meeting point of the angled grooves.

27. The arrangement of claim 26, wherein at least two additional recesses are located in the first angled portion.

28. A cap for an eyepiece housing comprising:

a cap adapted to fit around an eyepiece housing, wherein the eyepiece housing has at least three protrusions aligned radially outward from the eyepiece housing and being stationary with respect to the housing, wherein the at least three protrusions are arranged on the housing such that at least three protrusions each have a portion that lies substantially in a plane normal to the longitudinal axis of the eyepiece housing, and wherein the outward ends of each of the at least three protrusions have approximately the same spacing from the longitudinal axis; wherein

the cap has at least three grooves adapted to respectively associate with at least three protrusions on the housing when the cap is operationally positioned on the eyepiece housing, wherein

the grooves are arranged on an inner side of the cap, wherein

the grooves have at least a portion that is angled in the axial direction, and wherein

the at least three grooves adapted to associate with at least three protrusions have a sliding bottom having a radial spacing that is smaller than the radial spacing of the outward ends of the protrusions when the cap is not operationally positioned on the eyepiece housing.

29. An eyepiece housing arrangement comprising:

an eyepiece housing having at least three protrusions aligned radially outward from the eyepiece housing and being stationary with respect to the housing, the housing adapted to accept a cap having at least three grooves adapted to respectively associate with at least three protrusions on the eyepiece housing when the cap is operationally positioned on the eyepiece housing, wherein the grooves of the cap are arranged on an inner side of the cap, and wherein the grooves have at least a portion that is angled in the circumferential direction; wherein

the at least three protrusions associating with the cap are arranged on the housing such that the at least three protrusions each have a portion that lies substantially in a plane normal to the longitudinal axis of the eyepiece housing, and wherein

outward ends of each of the at least three protrusions have approximately the same spacing from the longitudinal axis.

30. A microscope, telescope, camera, binoculars, or monocular having an eyepiece housing, the improvement comprising an arrangement according to claim 1.

31. A microscope, telescope, camera, binoculars, or monocular having an eyepiece housing, the improvement comprising an arrangement according to claim 12.

32. A microscope, telescope, camera, binoculars, or monocular having an eyepiece housing, the improvement comprising an arrangement according to claim 25.

33. A microscope, telescope, camera, binoculars, or monocular having an eyepiece housing, the improvement comprising an arrangement according to claim 26.

34. A microscope, telescope, camera, binoculars, or monocular having an eyepiece housing, the improvement comprising an arrangement according to claim 27.